- 1. A lighting apparatus for emitting white light comprising:
  - a light source emitting radiation at from about 250 nm to about 550 nm; and
  - a phosphor composition radiationally coupled to the light source, the phosphor composition comprising (Tb<sub>1-x-y-z-w</sub>Y<sub>x</sub>Gd<sub>y</sub>Lu<sub>z</sub>Ce<sub>w</sub>)<sub>3</sub>M<sub>r</sub>Al<sub>s-r</sub>O<sub>12+ $\delta$ </sub>, where M is selected from Sc, In, Ga, Zn, or Mg, and where 0<w≤0.3, 0≤x<1, 0≤y≤0.4, 0≤z<1, 0≤r≤4.5, 4.5≤s≤6, and -1.5≤ $\delta$ ≤1.5.
- 2. The lighting apparatus of claim 1, wherein the light source is a semiconductor light emitting diode (LED) emitting radiation having a wavelength in the range of from about 350 to about 550 nm.
- 3. The lighting apparatus of claim 2, wherein the LED comprises a nitride compound semiconductor represented by the formula  $In_iGa_jAl_kN$ , where  $0 \le i$ ;  $0 \le j$ ,  $0 \le K$ , and i + j + k = 1.
- 4. The lighting apparatus of claim 1, wherein the light source is an organic emissive structure.
- 5. The lighting apparatus of claim 1, wherein the phosphor composition is coated on the surface of the light source.
- 6. The lighting apparatus of claim 1, further comprising an encapsulant surrounding the light source and the phosphor composition.
- 7. The lighting apparatus of claim 1, wherein the phosphor composition is dispersed in the encapsulant.
- 8. The lighting apparatus of claim 1, further comprising a reflector cup.

- 9. The lighting apparatus of claim 1, wherein said phosphor composition comprises  $(Tb_{0.57}Ce_{0.03}Y_{0.2}Gd_{0.2})_3Al_{4.9}O_{12+\delta}$ .
- 10. The lighting apparatus of claim 1, wherein said phosphor composition further comprises one or more additional phosphor.
- 11. The lighting apparatus of claim 10, wherein said one or more additional phosphors are selected from the group consisting (Ba,Sr,Ca)<sub>5</sub>(PO<sub>4</sub>)<sub>3</sub>(Cl,F,Br,OH):Eu<sup>2+</sup>,Mn<sup>2+</sup>,Sb<sup>3+</sup>;  $(Ba,Sr,Ca)MgAl_{10}O_{17}:Eu^{2+},Mn^{2+};$   $(Ba,Sr,Ca)BPO_5:Eu^{2+},Mn^{2+};$ 2SrO\*0.84P<sub>2</sub>O<sub>5</sub>\*0.16B<sub>2</sub>O<sub>3</sub>:Eu<sup>2+</sup>;  $(Sr,Ca)_{10}(PO_4)_6*nB_2O_3:Eu^{2+};$ Sr<sub>2</sub>Si<sub>3</sub>O<sub>8\*2</sub>SrCl<sub>2</sub>:Eu<sup>2+</sup>; Ba<sub>3</sub>MgSi<sub>2</sub>O<sub>8</sub>:Eu<sup>2+</sup>; Sr<sub>4</sub>Al<sub>14</sub>O<sub>25</sub>:Eu<sup>2+</sup>; BaAl<sub>8</sub>O<sub>13</sub>:Eu<sup>2+</sup>; Sr<sub>4</sub>Al<sub>14</sub>O<sub>25</sub>:Eu<sup>2+</sup>;  $BaAl_8O_{13}:Eu^{2+};$   $2SrO-0.84P_2O_{5-0.16}B_2O_3:Eu^{2+};$  $(Ba,Sr,Ca)MgAl_{10}O_{17}:Eu^{2+},Mn^{2+};$ (Ba,Sr,Ca)<sub>5</sub>(P0<sub>4</sub>)<sub>3</sub>(Cl,F,OH);Eu<sup>2+</sup>,Mn<sup>2+</sup>,Sb<sup>3+</sup>;  $(Ba.Sr.Ca)MgAl_{10}O_{17}:Eu^{2+},Mn^{2+};$ (Ba,Sr,Ca)Al<sub>2</sub>O<sub>4</sub>:Eu<sup>2+</sup>;  $(Y,Gd,Lu,Sc,La)BO_3:Ce^{3+},Tb^{3+};$   $(Da,Si,Ca)Ai_2O_4.Lu^{-},Mn^{2+};$   $(Y,Gd,Lu,Sc,La)BO_3:Ce^{3+},Tb^{3+};$   $(Da,Si,Ca)Ai_2O_4.Lu^{-},Mn^{2+};$ (Ba,Sr,Ca)2SiO4:Eu2+; (Ba,Sr,Ca)<sub>2</sub>(Mq,Zn)Si<sub>2</sub>O<sub>7</sub>:Eu<sup>2+</sup>: (Sr,Ca,Ba)(Al,Ga,In)<sub>2</sub>S<sub>4</sub>:Eu<sup>2+</sup>; (Y,Gd,Tb,La,Sm,Pr,  $Lu)_3(AI,Ga)_5O_{12}:Ce^{3+};$  (Ca,Sr)<sub>8</sub>(Mg,Zn)(SiO<sub>4</sub>)<sub>4</sub>Cl<sub>2</sub>:  $Eu^{2+},Mn^{2+}$  (CASI);  $Na_2Gd_2B_2O_7:Ce^{3+},Tb^{3+}$  $(Ba,Sr)_2(Ca,Mg,Zn)B_2O_6:K,Ce,Tb;$  $(Sr,Ca,Ba,Mg,Zn)_2P_2O_7:Eu^{2+},Mn^{2+}$ (SPP); Eu<sup>2+</sup>, Mn<sup>2+</sup>;  $(Ca,Sr,Ba,Mg)_{10}(PO_4)_6(F,Cl,Br,OH)$ : (Gd,Y,Lu,La)<sub>2</sub>O<sub>3</sub>:Eu<sup>3+</sup>,Bi<sup>3+</sup>; (Gd,Y,Lu,La)<sub>2</sub>O<sub>2</sub>S:Eu<sup>3+</sup>,Bi<sup>3+</sup>; (Gd,Y,Lu,La)VO<sub>4</sub>:Eu<sup>3+</sup>,Bi<sup>3+</sup>; (Ca,Sr)S:Eu<sup>2+</sup>; SrY<sub>2</sub>S<sub>4</sub>:Eu<sup>2+</sup>; CaLa<sub>2</sub>S<sub>4</sub>:Ce<sup>3+</sup>; (Ca,Sr)S:Eu<sup>2+</sup>; 3.5MgO\*0.5MgF<sub>2</sub>\*GeO<sub>2</sub>:Mn<sup>4+</sup>;  $(Ba,Sr,Ca)MgP_2O_7:Eu^{2+},Mn^{2+};$ (Y,Lu)<sub>2</sub>WO<sub>6</sub>:Eu<sup>3</sup>+, Mo<sup>6+</sup>: (Ba,Sr,Ca)<sub>x</sub>Si<sub>y</sub>N<sub>z</sub>:Eu<sup>2+</sup>.
- 12. The lighting apparatus of claim 1, further comprising a (Tb,Y)<sub>3</sub>Al<sub>4.9</sub>O<sub>12-</sub> <sub>δ</sub>:Ce<sup>3+</sup> phosphor wherein -1≤δ≤1.

- 13. The lighting apparatus of claim 1, wherein said lighting apparatus has a CCT value from about 2500 to 8000.
- 14. The lighting apparatus of claim 1, wherein said lighting apparatus has a CRI value of greater than 60.
- 15. A lighting apparatus for emitting white light comprising:
  - a light source emitting radiation at from about 250 to about 550 nm; and
  - a phosphor composition radiationally coupled to the light source, the phosphor composition comprising  $(RE_{1-x}Sc_xCe_y)_2A_{3-p}B_pSi_{z-q}Ge_qO_{12+\delta}$ , where RE is selected from a lanthanide ion or Y<sup>3+</sup>, A is selected from Mg, Ca, Sr, or Ba, B is selected from Mg and Zn, and where  $0\le p\le 3$ ,  $0\le q\le 3$ ,  $2.5\le z\le 3.5$ ,  $0\le x<1$ ,  $0< y\le 0.3$ ,  $-1.5\le \delta\le 1.5$ .
- 16. The lighting apparatus of claim 15, wherein the light source is a semiconductor LED emitting radiation having a wavelength in the range of from about 350 to about 550 nm.
- 17. The lighting apparatus of claim 16, wherein the LED comprises a nitride compound semiconductor represented by the formula  $In_iGa_iAl_kN$ , where  $0 \le i$ ;  $0 \le K$ , and i + j + k = 1.
- 18. The lighting apparatus of claim 15, wherein said light source is an organic emissive structure.
- 19. The lighting apparatus of claim 15, wherein the phosphor composition is coated on the surface of the light source.
- 20. The lighting apparatus of claim 15, further comprising an encapsulant surrounding the light source and the phosphor composition.

- 21. The lighting apparatus of claim 15, wherein the phosphor composition is dispersed in the encapsulant.
- 22. The lighting apparatus of claim 15, further comprising a reflector cup.
- 23. The lighting apparatus of claim 15, wherein said phosphor composition comprises (Lu<sub>0.955</sub>Ce<sub>0.045</sub>)<sub>2</sub>CaMg<sub>2</sub>Si<sub>3</sub>O<sub>12</sub>.
- 24. The lighting apparatus of claim 15, wherein said phosphor composition comprises two or more distinct phosphors having the formula (RE<sub>1-x</sub>Sc<sub>x</sub>Ce<sub>y</sub>)<sub>2</sub>A<sub>3-p</sub>B<sub>p</sub>Si<sub>z-q</sub>Ge<sub>q</sub>O<sub>12+ $\delta$ </sub>, where RE is selected from a lanthanide ion or Y<sup>3+</sup>, A is selected from Mg, Ca, Sr, or Ba, B is selected from Mg and Zn, and where  $0 \le p \le 3$ ,  $0 \le q \le 3$ ,  $2.5 \le z \le 3.5$ ,  $0 \le x < 1$ ,  $0 < y \le 0.3$ ,  $-1.5 \le \delta \le 1.5$ , wherein each of said distinct phosphors has a different emission spectrum.
- 25. The lighting apparatus of claim 15, wherein said phosphor composition further comprises one or more additional phosphors.
- 26. The lighting apparatus of claim 25, wherein said one or more additional phosphors are selected from the consisting group of (Ba,Sr,Ca)<sub>5</sub>(PO<sub>4</sub>)<sub>3</sub>(Cl,F,Br,OH):Eu<sup>2+</sup>,Mn<sup>2+</sup>,Sb<sup>3+</sup>:  $(Ba,Sr,Ca)MgAl_{10}O_{17}:Eu^{2+},Mn^{2+};$ (Ba,Sr,Ca)BPO<sub>5</sub>:Eu<sup>2+</sup>,Mn<sup>2+</sup>:  $(Sr_1Ca)_{10}(PO_4)_6*nB_2O_3:Eu^{2+}$ 2SrO\*0.84P<sub>2</sub>O<sub>5</sub>\*0.16B<sub>2</sub>O<sub>3</sub>:Eu<sup>2+</sup>:  $Sr_2Si_3O_{8^2}SrCl_2:Eu^{2^+}; Ba_3MgSi_2O_8:Eu^{2^+}; Sr_4Al_{14}O_{25}:Eu^{2^+}; BaAl_8O_{13}:Eu^{2^+};$ Sr<sub>4</sub>Al<sub>14</sub>O<sub>25</sub>:Eu<sup>2+</sup>;  $BaAl_8O_{13}:Eu^{2+};$ 2SrO-0.84P<sub>2</sub>O<sub>5-0.16</sub>B<sub>2</sub>O<sub>3</sub>:Eu<sup>2+</sup>;  $(Ba,Sr,Ca)MgAl_{10}O_{17}:Eu^{2+},Mn^{2+};$  $(Ba,Sr,Ca)_5(P0_4)_3(Cl,F,OH):Eu^{2+},Mn^{2+},Sb^{3+};$  $(Ba,Sr,Ca)MgAl_{10}O_{17}:Eu^{2+},Mn^{2+};$ (Ba,Sr,Ca)Al<sub>2</sub>O<sub>4</sub>:Eu<sup>2+</sup>;  $(Y,Gd,Lu,Sc,La)BO_3:Ce^{3+},Tb^{3+};$   $Ca_8Mg(SiO_4)_4Cl_2:Eu^{2+},Mn^{2+};$ (Ba,Sr,Ca)<sub>2</sub>SiO<sub>4</sub>:Eu<sup>2+</sup>;  $(Ba,Sr,Ca)_2(Mg,Zn)Si_2O_7:Eu^{2+};$ (Sr,Ca,Ba)(Al,Ga,In)<sub>2</sub>S<sub>4</sub>:Eu<sup>2+</sup>; (Y,Gd,Tb,La,Sm,Pr, Lu)<sub>3</sub>(Al,Ga)<sub>5</sub>O<sub>12</sub>:Ce<sup>3+</sup>; (Ca,Sr)<sub>8</sub>(Mg,Zn)(SiO<sub>4</sub>)<sub>4</sub>Cl<sub>2</sub>: Eu<sup>2+</sup>,Mn<sup>2+</sup> (CASI);

 $\label{eq:control_state} Na_2Gd_2B_2O_7:Ce^{3+},Tb^{3+}; \qquad (Ba,Sr)_2(Ca,Mg,Zn)B_2O_6:K,Ce,Tb;\\ (Sr,Ca,Ba,Mg,Zn)_2P_2O_7:Eu^{2+},Mn^{2+} \qquad (SPP);\\ (Ca,Sr,Ba,Mg)_{10}(PO_4)_6(F,Cl,Br,OH): \qquad Eu^{2+},Mn^{2+};\\ (Gd,Y,Lu,La)_2O_3:Eu^{3+},Bi^{3+}; \qquad (Gd,Y,Lu,La)_2O_2S:Eu^{3+},Bi^{3+};\\ (Gd,Y,Lu,La)VO_4:Eu^{3+},Bi^{3+}; \qquad (Gd,Y,Lu,La)_2O_2S:Eu^{3+},Bi^{3+};\\ (Ca,Sr)S:Eu^{2+}; \qquad 3.5MgO^*0.5MgF_2*GeO_2:Mn^{4+};\\ (Ba,Sr,Ca)MgP_2O_7:Eu^{2+},Mn^{2+}; \qquad (Y,Lu)_2WO_6:Eu^{3+}, \qquad Mo^{6+};\\ (Ba,Sr,Ca)_xSi_vN_z:Eu^{2+}.$ 

- 27. The lighting apparatus of claim 15, further comprising a  $(Tb,Y)_3AI_{4.9}O_{12-}$   $_{\delta}:Ce^{3+}$  phosphor wherein -1 $\leq\delta\leq1$ .
- 28. The lighting apparatus of claim 15, wherein  $2.9 \le z \le 3.1$ .
- 29. The lighting apparatus of claim 15, wherein  $0 \le q/(z-q) \le 0.5$ .
- 30. The lighting apparatus of claim 15, wherein A is Ca.
- 31. The lighting apparatus of claim 15, wherein A is Mg.
- 32. The lighting apparatus of claim 15, wherein B is Mg.
- 33. The lighting apparatus of claim 15, wherein  $y \le 0.05$ .
- 34. The lighting apparatus of claim 15, wherein said lighting apparatus has a CCT value from about 2500 to 8000.
- 35. The lighting apparatus of claim 15, wherein said lighting apparatus has a CRI value of greater than 60.
- 36. A phosphor composition comprising  $(Tb_{1-x-y-z-w}Y_xGd_yLu_zCe_w)_3M_rAl_{s-r}O_{12+\delta}$ , where M is selected from Sc, In, Ga, Zn, or Mg, and where  $0 \le 0.3$ ,  $0 \le x \le 1$ ,  $0 \le y \le 0.4$ ,  $0 \le z \le 1$ ,  $0 \le r \le 4.5$ ,  $4.5 \le s \le 6$ , and  $-1.5 \le \delta \le 1.5$ .

- 37. The phosphor composition according to claim 36 comprising (Tb<sub>0.57</sub>Ce<sub>0.03</sub>Y<sub>0.2</sub>Gd<sub>0.2</sub>)<sub>3</sub>Al<sub>4.9</sub>O<sub>12+δ</sub>.
- 38. The phosphor composition according to claim 36, wherein said phosphor composition is capable of absorbing the radiation emitted by a light source emitting from 400-500 nm and emitting radiation that, when combined with said radiation from said light source, produces white light.
- 39. A phosphor composition comprising  $(RE_{1-x}Sc_xCe_y)_2A_{3-p}B_pSi_{z-q}Ge_qO_{12+\delta}$ , where RE is selected from a lanthanide ion or  $Y^{3+}$ , A is selected from Mg, Ca, Sr, or Ba, B is selected from Mg and Zn, and where  $0 \le p \le 3$ ,  $0 \le q \le 3$ ,  $2.5 \le z \le 3.5$ ,  $0 \le x < 1$ ,  $0 < y \le 0.3$ ,  $-1.5 \le \delta \le 1.5$ .
- 40. The phosphor composition according to claim 39, wherein 2.9 ≤z ≤3.1.
- 41. The phosphor composition according to claim 39, wherein 0 ≤q/(z-q) ≤0.5.
- 42. The phosphor composition according to claim 39, wherein A is Ca.
- 43. The phosphor composition according to claim 39, wherein A is Mg.
- 44. The phosphor composition according to claim 39, wherein B is Mg.
- 45. The phosphor composition according to claim 39, wherein  $y \le 0.05$ .
- 46. The phosphor composition according to claim 39 comprising  $(Lu_{0.955}Ce_{0.045})_2CaMg_2Si_3O_{12}$ .
- 47. The phosphor composition according to claim 39, wherein said phosphor composition is capable of absorbing the radiation emitted by

- a light source emitting from 400-500 nm and emitting radiation that, when combined with said radiation from said light source, produces white light.
- 48. A phosphor blend including a first phosphor selected from the group consisting of  $(Tb,Y)_3Al_{4.9}O_{12-\delta}$ : $Ce^{3+}$  wherein  $-1 \le \delta \le 1$  and  $(Tb_{1-x-y-z-w}Y_xGd_yLu_zCe_w)_3M_rAl_{s-r}O_{12+\delta}$ , where M is selected from Sc, In, Ga, Zn, or Mg, and where  $0 \le 0.3$ ,  $0 \le x < 1$ ,  $0 \le y \le 0.4$ ,  $0 \le z < 1$ ,  $0 \le r \le 4.5$ ,  $4.5 \le s \le 6$ , and  $-1.5 \le \delta \le 1.5$ , and a second phosphor having the formula  $(RE_{1-x}Sc_xCe_y)_2A_{3-p}B_pSi_{z-q}Ge_qO_{12+\delta}$ , where RE is selected from a lanthanide ion or  $Y^{3+}$ , A is selected from Mg, Ca, Sr, or Ba, B is selected from Mg and Zn, and where  $0 \le p \le 3$ ,  $0 \le q \le 3$ ,  $2.5 \le z \le 3.5$ ,  $0 \le x < 1$ ,  $0 < y \le 0.3$ ,  $-1.5 \le \delta \le 1.5$ .
- 49. A phosphor composition comprising  $(Ca_{1-x-y-z}Sr_xBa_yCe_z)_3(Sc_{1-a-b}Lu_aD_c)_2Si_{n-w}Ge_wO_{12+\delta}$ , where D is either Mg or Zn,  $0 \le x < 1$ ,  $0 \le y < 1$ ,  $0 < z \le 0.3$ ,  $0 \le a \le 1$ ,  $0 \le c \le 1$ ,  $0 \le w \le 3$ ,  $2.5 \le n \le 3.5$ , and  $-1.5 \le \delta \le 1.5$ .
- 50. The phosphor composition according to claim 49, comprising Ca<sub>3</sub>Sc<sub>2</sub>(Si<sub>x</sub>Ge<sub>1-x</sub>)<sub>3</sub>O<sub>12</sub>:Ce<sup>3+</sup>, wherein x is from 0.67 to 1.0.
- 51. The phosphor composition according to claim 50, comprising Ca<sub>3</sub>Sc<sub>2</sub>Si<sub>3</sub>O<sub>12</sub>:Ce<sup>3+</sup>.
- 52. The phosphor composition according to claim 50, comprising  $(Ca_{0.99}Ce_{0.01})_3Sc_2Si_3O_{12}:Ce^{3+}$ .
- 53. The phosphor composition according to claim 49, wherein said phosphor composition is capable of absorbing radiation having a wavelength of from about 250 to about 490 nm and emitting radiation with an emission maximum at about 505 nm.
- 54. The phosphor composition according to claim 49, wherein  $2.9 \le n \le 3.1$ .

- 55. The phosphor composition according to claim 49, wherein 0≤w/(n-w) ≤0.5.
- 56. The phosphor composition according to claim 49, wherein  $x \le 0.1$ .
- 57. The phosphor composition according to claim 49, wherein  $y \le 0.1$ .
- 58. The phosphor composition according to claim 49, wherein  $z \le 0.05$ .
- 59. The phosphor composition according to claim 49, wherein  $a \le 0.10$ .
- 60. The phosphor composition according to claim 49, comprising  $Ca_3Sc_2(Si_xGe_{1-x})_3O_{12}:Ce^{3+}$ , wherein x is from 0.67 to 1.0.
- 61. The phosphor composition according to claim 49, comprising Ca<sub>3</sub>Sc<sub>2</sub>Si<sub>3</sub>O<sub>12</sub>:Ce<sup>3+</sup>.
- 62. The phosphor composition according to claim 49, comprising  $(Ca_{0.99}Ce_{0.01})_3Sc_2Si_3O_{12}:Ce^{3+}$ .
- 63. The phosphor composition according to claim 49, further comprising  $(Tb_{1-x-y-z-w}Y_xGd_yLu_zCe_w)_3M_rAl_{s-r}O_{12+\delta}$ , where M is selected from Sc, In, Ga, Zn, or Mg, and where  $0 < w \le 0.3$ ,  $0 \le x < 1$ ,  $0 \le y \le 0.4$ ,  $0 \le z < 1$ ,  $0 \le r \le 4.5$ ,  $4.5 \le s \le 6$ , and  $-1.5 \le \delta \le 1.5$ ; and  $(RE_{1-x}Sc_xCe_y)_2A_{3-p}B_pSi_{z-q}Ge_qO_{12+\delta}$ , where RE is selected from a lanthanide ion or  $Y^{3+}$ , A is selected from Mg, Ca, Sr, or Ba, B is selected from Mg and Zn, and where  $0 \le p \le 3$ ,  $0 \le q \le 3$ ,  $2.5 \le z \le 3.5$ ,  $0 \le x < 1$ ,  $0 < y \le 0.3$ ,  $-1.5 \le \delta \le 1.5$ .
- 64. A lighting apparatus comprising a light source emitting radiation having an emission wavelength of from about 250 to about 500 nm and a phosphor composition comprising (Ca<sub>1-x-y-z</sub>Sr<sub>x</sub>Ba<sub>y</sub>Ce<sub>z</sub>)<sub>3</sub>(Sc<sub>1-a-</sub>

- $_{b}Lu_{a}D_{c})_{2}Si_{n-w}Ge_{w}O_{12+\delta}$ , where D is either Mg or Zn,  $0 \le x < 1$ ,  $0 \le y < 1$ ,  $0 < x \le 0.3$ ,  $0 \le a \le 1$ ,  $0 \le c \le 1$ ,  $0 \le w \le 3$ ,  $2.5 \le n \le 3.5$ , and  $-1.5 \le \delta \le 1.5$ .
- 65. The lighting apparatus of claim 64, wherein said lighting apparatus is a white light emitting device.
- 66. The lighting apparatus of claim 64, further comprising one or more additional phosphors.
- 67. The lighting apparatus of claim 66, wherein said one or more additional phosphors are selected from the group consisting of (Ba,Sr,Ca)<sub>5</sub>(PO<sub>4</sub>)<sub>3</sub>(Cl,F,Br,OH):Eu<sup>2+</sup>,Mn<sup>2+</sup>,Sb<sup>3+</sup>;

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 \begin{array}{lll} (\mathsf{Ba},\mathsf{Sr},\mathsf{Ca})\mathsf{Mg}\mathsf{Al}_{10}\mathsf{O}_{17}:\mathsf{Eu}^{2+},\mathsf{Mn}^{2+}; & (\mathsf{Ba},\mathsf{Sr},\mathsf{Ca})\mathsf{BPO}_5:\mathsf{Eu}^{2+},\mathsf{Mn}^{2+}; \\ (\mathsf{Sr},\mathsf{Ca})_{10}(\mathsf{PO}_4)_6*\mathsf{nB}_2\mathsf{O}_3:\mathsf{Eu}^{2+}; & 2\mathsf{SrO}^*0.84\mathsf{P}_2\mathsf{O}_5*0.16\mathsf{B}_2\mathsf{O}_3:\mathsf{Eu}^{2+}; \\ \mathsf{Sr}_2\mathsf{Si}_3\mathsf{O}_{8^*2}\mathsf{SrCl}_2:\mathsf{Eu}^{2+}; & \mathsf{Ba}_3\mathsf{Mg}\mathsf{Si}_2\mathsf{O}_8:\mathsf{Eu}^{2+}; & \mathsf{Sr}_4\mathsf{Al}_{14}\mathsf{O}_{25}:\mathsf{Eu}^{2+}; & \mathsf{Ba}\mathsf{Al}_8\mathsf{O}_{13}:\mathsf{Eu}^{2+}; \\ \mathsf{Sr}_4\mathsf{Al}_{14}\mathsf{O}_{25}:\mathsf{Eu}^{2+}; & \mathsf{Ba}\mathsf{Al}_8\mathsf{O}_{13}:\mathsf{Eu}^{2+}; & 2\mathsf{SrO}^-0.84\mathsf{P}_2\mathsf{O}_{5^-0.16}\mathsf{B}_2\mathsf{O}_3:\mathsf{Eu}^{2+}; \\ (\mathsf{Ba},\mathsf{Sr},\mathsf{Ca})\mathsf{Mg}\mathsf{Al}_{10}\mathsf{O}_{17}:\mathsf{Eu}^{2+},\mathsf{Mn}^{2+}; \\ (\mathsf{Ba},\mathsf{Sr},\mathsf{Ca})_5(\mathsf{PO}_4)_3(\mathsf{Cl},\mathsf{F},\mathsf{OH}):\mathsf{Eu}^{2+},\mathsf{Mn}^{2+},\mathsf{Sb}^{3+}; \\ \end{array}
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 $(Ba,Sr,Ca)MgAl_{10}O_{17}:Eu^{2+},Mn^{2+}; \\ (Y,Gd,Lu,Sc,La)BO_3:Ce^{3+},Tb^{3+}; \\ (Ba,Sr,Ca)_2SiO_4:Eu^{2+}; \\ (Ba,Sr,Ca)_2(Mg,Zn)Si_2O_7:Eu^{2+}; \\ (Ba,Sr,Ca)_2(Mg,Zn)Si_2O_7:Eu^$ 

 $(Sr,Ca,Ba)(Al,Ga,In)_2S_4:Eu^{2+};$  (Y,Gd,Tb,La,Sm,Pr,Lu)<sub>3</sub>(Al,Ga)<sub>5</sub>O<sub>12</sub>:Ce<sup>3+</sup>; (Ca,Sr)<sub>8</sub>(Mg,Zn)(SiO<sub>4</sub>)<sub>4</sub>Cl<sub>2</sub>: Eu<sup>2+</sup>,Mn<sup>2+</sup> (CASI);

 $Na_2Gd_2B_2O_7:Ce^{3+},Tb^{3+};$  (Ba,Sr)<sub>2</sub>(Ca,Mg,Zn)B<sub>2</sub>O<sub>6</sub>:K,Ce,Tb;

 $(Sr,Ca,Ba,Mg,Zn)_2P_2O_7:Eu^{2+},Mn^{2+}$  (SPP);  $(Ca,Sr,Ba,Mg)_{10}(PO_4)_6(F,Cl,Br,OH):$   $Eu^{2+},Mn^{2+};$ 

(Gd,Y,Lu,La)<sub>2</sub>O<sub>3</sub>:Eu<sup>3+</sup>,Bi<sup>3+</sup>; (Gd,Y,Lu,La)<sub>2</sub>O<sub>2</sub>S:Eu<sup>3+</sup>,Bi<sup>3+</sup>;

(Gd,Y,Lu,La)VO<sub>4</sub>:Eu<sup>3+</sup>,Bi<sup>3+</sup>; (Ca,Sr)S:Eu<sup>2+</sup>; SrY<sub>2</sub>S<sub>4</sub>:Eu<sup>2+</sup>; CaLa<sub>2</sub>S<sub>4</sub>:Ce<sup>3+</sup>;

(Ca,Sr)S:Eu<sup>2+</sup>; 3.5MgO\*0.5MgF<sub>2</sub>\*GeO<sub>2</sub>:Mn<sup>4+</sup>;

 $(Ba,Sr,Ca)MgP_2O_7:Eu^{2+},Mn^{2+};$   $(Y,Lu)_2WO_6:Eu^{3+},$   $Mo^{6+};$ 

(Ba,Sr,Ca)<sub>x</sub>Si<sub>y</sub>N<sub>z</sub>:Eu<sup>2+</sup>.

- 68. The lighting apparatus of claim 64, further comprising at least one phosphor selected from the group consisting of  $(Tb_{1-x-y-z-w}Y_xGd_yLu_zCe_w)_3M_rAl_{s-r}O_{12+\delta}$ , where M is selected from Sc, In, Ga, Zn, or Mg, and where  $0 < w \le 0.3$ ,  $0 \le x < 1$ ,  $0 \le y \le 0.4$ ,  $0 \le z < 1$ ,  $0 \le r \le 4.5$ ,  $4.5 \le s \le 6$ , and  $-1.5 \le \delta \le 1.5$ ;  $(RE_{1-x}Sc_xCe_y)_2A_{3-p}B_pSi_{z-q}Ge_qO_{12+\delta}$ , where RE is selected from a lanthanide ion or  $Y^{3+}$ , A is selected from Mg, Ca, Sr, or Ba, B is selected from Mg and Zn, and where  $0 \le p \le 3$ ,  $0 \le q \le 3$ ,  $2.5 \le z \le 3.5$ ,  $0 \le x < 1$ ,  $0 < y \le 0.3$ ,  $-1.5 \le \delta \le 1.5$ ; and  $(Tb, Y)_3Al_4 = 0$
- 69. The lighting apparatus of claim 64, wherein the light source is a semiconductor light emitting diode.
- 70. The lighting apparatus of claim 64, wherein said lighting apparatus has a CRI value of greater than 60.
- 71. The lighting apparatus of claim 64, wherein said phosphor comprises  $Ca_3Sc_2(Si_xGe_{1-x})_3O_{12}:Ce^{3+}$ , wherein x is from 0.67 to 1.0.
- 72. The lighting apparatus of claim 64, wherein said phosphor comprises  $Ca_3Sc_2Si_3O_{12}:Ce^{3+}$ .
- 73. The lighting apparatus of claim 64, wherein said phosphor comprises (Ca<sub>0.99</sub>Ce<sub>0.01</sub>)<sub>3</sub>Sc<sub>2</sub>Si<sub>3</sub>O<sub>12</sub>:Ce<sup>3+</sup>.